Alcatel-Lucent ISAM Voice

For smooth migration to NGN/IMS

The Alcatel-Lucent Intelligent Services Access Manager (ISAM) Voice component provides Voice over IP (VoIP) gateway functionality to the Alcatel-Lucent ISAM family of products. With ISAM Voice, service providers are able to connect customer premises legacy POTS or ISDN to Next-Generation Networks (NGNs) and IMS networks. With the ISAM family, operators can also deploy a converged broadband access network that supports triple play rollout, including new services, such as Internet Protocol TV, (IPTV) while migrating the legacy PSTN to an NGN/IMS environment — key factors in successfully transforming access networks.

Dealing with PSTN migration

As an incumbent service provider in an increasingly saturated fixed voice market, you face the declining profitability of your PSTN. With severe competition, the average price per minute of voice calls is decreasing; moreover, cable operators are offering attractive service bundles; alternative VoIP providers are offering low tariffs using third-party access networks, and some customers are abandoning fixed voice lines in favor of mobile phones.

At the same time, your operational costs are flat at best, with a trend to increase as the TDM network becomes older and obsolete. In fact, the eventual cost of running the network will no longer be justified by the revenue the network generates.

To meet these challenges, you are looking to migrate your PSTN to an IP network. Remaining competitive means optimizing the delivery of traditional voice services while creating an all-IP network capable of delivering new voice and multimedia services. This dual-pronged strategy makes sense. As broadband penetration continues to grow, you can combine your investment in the modernization of the PSTN with the building out of IPTV and high-speed Internet access networks — two areas currently undergoing substantial growth. Adopting an IP- and Ethernet-based platform with the flexibility of bringing fiber as close as economically possible to the end user, will also let you achieve your goal of converged voice and data access networks, with minimum cost of ownership.

As part of their strategic initiative, service providers should re-evaluate current service offerings and product lifecycles, and prioritize services to be migrated onto next-generation network architecture. It's not efficient to migrate all services to the next-generation network at the same time — service providers should take a step-by-step approach for network optimization. Network optimization should be based on increasing network capacity and improving operational efficiency.

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IP Voice Transformation with Alcatel-Lucent ISAM Voice

Bundling opportunities with Alcatel-Lucent ISAM during IP voice migration

PSTN transformation is driven by fierce competition, erosion of voice revenue, network obsolescence, IP network transformation, bringing fiber closer to the end user, and the desire to introduce new and compelling voice-related services. As a result, you need a flexible solution to act on these challenges.

The Alcatel-Lucent IP-based ISAM — a major component of both the Alcatel-Lucent Triple Play Service Delivery Architecture (TPSDA) and the Alcatel-Lucent end-to-end IP Voice solution — is ideally positioned for PSTN network transformation.

Migrating legacy voice lines

For primary line migration, the Alcatel-Lucent ISAM family provides a network-based voice solution that lets you choose either SIP or H.248 as the signaling protocol. With this network-based solution, packetization occurs in the access node, so you don't need to change end-user equipment and the life-line support model (unlike the CPE-based approach — the alternative method for voice access).

What's more, the Alcatel-Lucent ISAM family offers superb VoIP quality of service (QoS). With advanced queue management for voice delivery, strict priority over any other service, you can rest assured of minimum transfer delay. Together with the support of both SIP and H.248, this advanced QoS implementation for voice, provides the most flexible path to IP voice transformation.

Delivering voice and data convergence with broadband evolution

As you expand your broadband rollout to increase coverage of IPTV while offering high-speed Internet access, you can lower the cost of modernizing the PSTN. Your investment in a true Triple Play Service Delivery Architecture (TPSDA) meets not only the challenge of obsolescence, but also lowers operational expenses (OPEX) via unified training and network management, as well as through shared spares and software upgrades for voice and broadband services. In addition, your OPEX is lowered through simpler bundled service offerings with self-profiling options for your customers.

With the Alcatel-Lucent ISAM family, you can also support video penetration in flexible deep-fiber scenarios. This enables the optimum reuse of the copper plant and improved subscriber high-capacity reach. With ISAM Voice, the Alcatel-Lucent ISAM family also supports the deployment of legacy PSTN interfaces and NGN/IMS media gateway functionality over the same platform in order to facilitate network convergence without discontinuity in subscriber offerings.

ISAM Voice components

As illustrated in Figure 1, the main hardware components of Alcatel-Lucent ISAM Voice are:

- an integrated voice packet server (NVPS) for H.248 signaling that interfaces with the NGN/IMS network through an H.248/Megaco signaling interface. In the case of SIP signaling, the user agent is hosted on the line termination card.
- Line termination (LT) boards to interconnect with POTS lines, ISDN lines (basic access line terminations, BRA)
- Splitter cards

Figure 1. ISAM Voice components

Voice Server (NVPS) POTS (NPOT) ISDN (NBAT) Splitters

What Alcatel-Lucent ISAM Voice offers

Alcatel-Lucent ISAM Voice components provide PSTN-quality VoIP, completing the future-safe, multiservice ISAM access solution by enabling innovative triple play services.

PSTN voice in an NGN/IMS access scenario

In cases where customers decide to migrate via a two-step approach, Alcatel-Lucent ISAM Voice enables the migration from NGN to the IMS core with a simple software upgrade.

Carrier-grade voice

Alcatel-Lucent ISAM Voice leverages comprehensive redundancy concepts such as server/network card redundancy, duplicate power distribution to the line cards, multiple fans and clock redundancy. On top of this, failover mechanisms are available when connecting to an IMS/NGN network and lawful intercept is also supported.

A non-blocking architecture

The Alcatel-Lucent ISAM family delivers superior-quality VoIP services due to its treatment of packetized voice traffic. It applies strict priority scheduling, assuring minimum delay and premium VoIP quality. Moreover, scalability is ensured because user agents are distributed to the linecards.

An advanced IP/Ethernet platform

IP/Ethernet technology is at the core of the Alcatel-Lucent ISAM family. These technologies aggregate various types of services from IP-enabled line cards to a Gigabit Ethernet core, including legacy POTS and ISDN subscriber interfaces. This approach ensures minimal delay for voice, minimal cost regardless of the service mix, the same operation for any service, and pure IP/VLAN QoS control, end-to-end.

One investment to cover all needs

With Alcatel-Lucent ISAM Voice, you don't need to invest twice — once in voice migration, and again in broadband access. By using Alcatel-Lucent ISAM Voice in the Alcatel-Lucent ISAM family, the CAPEX and OPEX spent migrating the voice access network can also create a broadband access footprint.

Minimized OPEX in the installed plant

With ISAM Voice, you can also minimize OPEX in the installed plant. That's because:

- All services come from a single multiservice IP/Ethernet access node, resulting in cost-effective maintenance, with minimal truck rolls and inventory of spares
- Pre-cabling combo solutions and zero-touch service provisioning for xDSL services or voice services deliver lower OPEX
- All services are managed by a single network management system, which is fully compatible with the management of any type of Alcatel-Lucent broadband portfolio.

Increased deployment flexibility

With Alcatel-Lucent ISAM Voice, you can also offer voice support with the overlay of existing DSLAM installations. Alternatively, you can choose a pre-seeding strategy: first, by installing Alcatel-Lucent ISAM in order to deliver xDSL, while pre-cabling the rack to introduce POTS or ISDN boards at a later stage. To support this strategy, the ISAM platform provides a complete and dense variety of DSL transmission technologies (ADSL, ADSL2, ADSL2 plus, VDSL2, S.HDSLbis). With a standardized concept for 24/48/72 port assemblies, the wiring is independent of the services provisioned on ISAM.

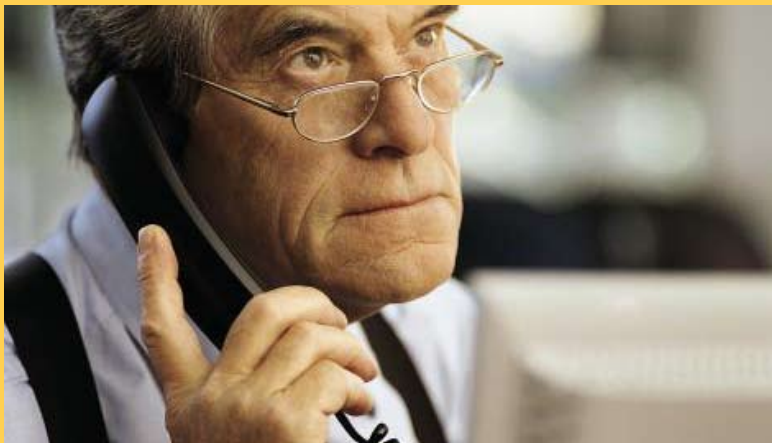
Additional cost-cutting through central office consolidation

With the Alcatel-Lucent ISAM family, you can also move to more powerful broadband access equipment (with VDSL2) capable of supporting higher bandwidth out of the central office (CO). By designing the access network on remote outdoor housings, you can liberate space from COs, emptying them eventually of all electronics.

You can also reach remote locations with fiber to the most economical point. This reduces the operational cost of running the voice access network. Just as good, you can reduce the size of COs, or even choose to sell them because they are sometimes located in high-cost business districts and downtown areas. With this welcome inflow of money, you can then invest further in core activities.

Future-safe investment

With Alcatel-Lucent ISAM Voice, you can also be sure that your initial investment retains its value in the future. Today, for example, voice line cards are software upgradeable to support ETSI TISPAN's latest SIP standards. In addition, the density of these line cards is regularly expanded, increasing the density of the voice terminations. With the ISAM architecture, you can also facilitate the smooth introduction of new features, such as access border gateway functionality, reinforcing its flexibility and multi-service capability.



Key ISAM voice features

Signaling protocols

Alcatel-Lucent ISAM Voice implements H.248/Megaco and SIP signaling to connect to NGN/IMS networks.

ISAM call control and traffic dimensioning with H.248/Megaco

Alcatel-Lucent ISAM Voice incorporates a separate call control engine that can be centralized for as many as 5,000 subscribers distributed in a number of access nodes (using either the Alcatel-Lucent 7302 ISAM, the 7330 ISAM FTTN Remote Aggregator or the 7356 ISAM FTTB Remote Expansion Module). The signaling gateway, or NVPS, is not overloaded with payload processing as this is done in the line card itself. The NVPS handles signaling events only, and supports up to 10 call attempts per second.

Emergency calls with H.248/Megaco

Ten percent of the call capacity is always reserved for emergency use, in addition to the 512 active, regular calls handled by the NVPS with H.248. Because each line card has its own user agent, ISAM can always initiate an emergency call.

Voice traffic prioritization

The line card packetizes voice traffic into IP packets with the highest IP priority. These packets are delivered to the highest priority virtual local access network (VLAN) queue of the Alcatel-Lucent ISAM. For voice traffic, the strict priority queue assures minimum delay.

Combo solutions

Voice lines provided by Alcatel-Lucent ISAM Voice can be delivered from a combo shelf on which voice and DSL are both provisioned. The combo shelf enables simplified cabling with MDF, zero-touch service provisioning and flexible growth of voice or xDSL services.

Shortest-path routing for voice calls

Local voice calls (calls between two subscribers served by the same Alcatel-Lucent ISAM node) are not routed through the NGN backbone, thus decreasing transmission and backbone capacity consumption.

Common shelves with any ISAM application

New Alcatel-Lucent ISAM Voice hardware and software can be installed in existing or new Alcatel-Lucent ISAM standard racks.

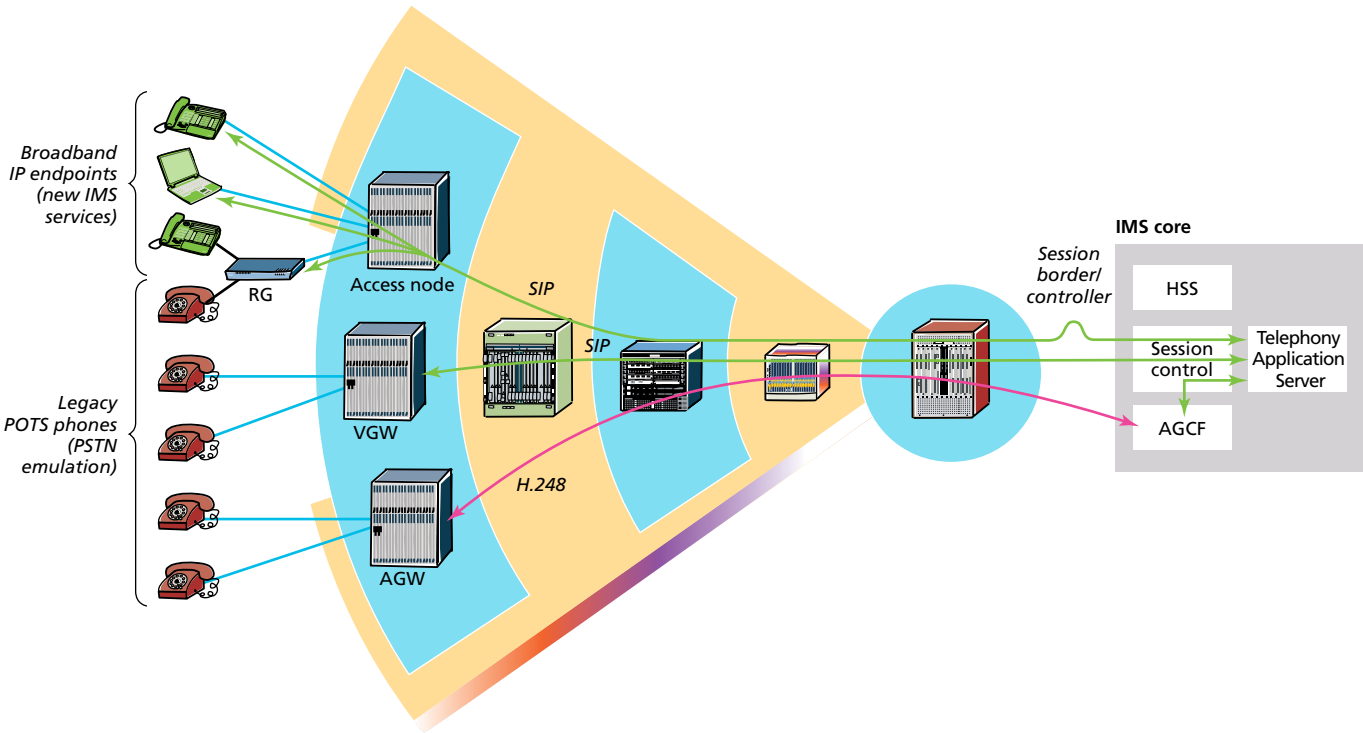
Line testing

Metallic Test Access (MTA) is supported for POTS. Integrated line testing is also supported in conjunction with the Alcatel-Lucent 5530 Network Analyzer, which facilitates fully integrated narrowband and broadband testing.

Part of the end-to-end IP voice solution

As illustrated in Figure 2 Alcatel-Lucent ISAM Voice is fully integrated with the rest of the Alcatel-Lucent portfolio to offer end-to-end solutions for the NGN/IMS. Layered on top of other Alcatel-Lucent products — intended for the growth of the PSTN network or PSTN legacy migration - ISAM Voice positions the Alcatel-Lucent ISAM family, including the Alcatel-Lucent 1540 Litespan MSAN, as the access/voice gateway for NGN/IMS deployments. These are focused on the immediate introduction of triple play services. At the same time, the fully standards-based Alcatel-Lucent ISAM Voice supports multivendor triple play NGN/IMS access opportunities.

Figure 2 . Alcatel-Lucent end-to-end IP voice solution



The Alcatel-Lucent advantage

Alcatel-Lucent is best positioned to help you achieve network optimization by offering triple play services over a cost-effective, single, converged network. The Alcatel-Lucent ISAM family offers a future-safe, multiservice intelligent IP broadband access platform that provides wire-speed delivery of value-added digital services, including IPTV, VoIP, gaming and teleworking. With the incorporation of Alcatel-Lucent ISAM Voice, and a choice between H.248 and SIP, the ISAM family also provides VoIP media gateway functionality to support a smooth migration of the legacy PSTN to NGN/IMS.

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